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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,548	07/01/2004	Luzhou Xu	CN 020001	5116
24737	7590	11/17/2006	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			FLORES, LEON	
			ART UNIT	PAPER NUMBER
			2635	

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/500,548

Applicant(s)

XU ET AL.

Examiner

Leon Flores

Art Unit

2635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

SUPERVISORY PATENT EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 1/11/2005.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "**said**," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A
"Sequence Listing" is required on paper if the application discloses a
nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if
the required "Sequence Listing" is not submitted as an electronic
document on compact disc).

Claim Objections

Claim 9 is objected to because of the following informalities:

Re Claim 9, the limitation "one unit" recited in line 20 lacks antecedent basis. It is not clear as to which unit, portable or network, the applicant is trying to contemplate. For the purpose of art consideration, the limitation "one unit" will be contemplated as being either the portable or network unit. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 13-14 are non-statutory because they merely recite a processor program product without being embodied in a physical medium of a computer readable medium as required by the Interim Guidelines, Annex IV(a).

“(a) Functional Descriptive Material: “Data Structures” Representing Descriptive Material Per Se or Computer Programs Representing Computer Listings Per Se

Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure’s functionality to be realized.”

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 & 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al. (US Patent 6,608,858 B1), and in view of Atarius et al. (US Patent 6,373,882)

Re Claim 1, Sih et al. disclose a rake receiver comprising at least two fingers (In Fig. 7: 700A & B), a combiner (710) coupled to said fingers and a compensator (704A). Sih et al. disclose a plurality of fingers, but fail to specifically disclose at least one finger comprises a finger compensator as claimed. However, Atarius et al. does (see col. 3, lines 1-18, and Fig. 1: 120 or Fig. 3: 320). Atarius et al. discloses a rake receiver capable of achieving delay compensation by the rake fingers.

Therefore, taking the combined teachings of Sih et al. and Atarius et al. as a whole, it would have been obvious to one of ordinary skill in the art to modify the rake finger system of Sih et al to incorporate delay compensation as taught by Atarius et al for compensating any delays due to changing propagations conditions (Atarius, col. 3, lines 14). Thus, optimizing the synchronization at the receiver end in the system of Sih et al.

Re Claim 6, the combination of Sih et al and Atarius et al further teaches that most fingers each comprise a finger compensator (Sih, fig. 7:704N), with all finger compensators together forming said compensator.

Re Claim 7, the combination of Sih et al and Atarius et al further teaches that said rake receiver comprises a mixer for converting intermediate frequency signals into

baseband signals, which mixer comprises an oscillator input coupled to a stable oscillator (Sih et al., fig. 2, where a mixer 112 and an oscillator 220 are disclosed for converting IF signals to baseband signals).

Claim 8 has been analyzed and rejected w/r to claim 1 above.

Claim 9, has been analyzed and rejected w/r to claim 1 above. Furthermore, the combination of Sih et al and Atarius et al pertains to a CDMA communications system comprising base stations and mobile units. Communications between base stations and mobile units is by way of mobile telephone switching office (MTSO) and public switch telephone network (PSTN) (Sih col. 1, line 49-55).

Claim 10 has been analyzed and rejected w/r to claim 9 above.

Claim 11 has been analyzed and rejected w/r to claim 9 above.

Claim 12 is a method claim corresponding to system claim 1. Hence, the elements in system claim 1 would have necessitated the method steps as claimed. Therefore, claim 12 has been analyzed and rejected w/r to claim 1 above.

Claims 13-14 have been analyzed and rejected w/r to claim 1 above.

Furthermore, the combination of Sih et al and Atarius et al pertains to a processor-

based CDMA communications system. Hence, implementing a program product is inherent and necessary.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al. (US Patent 6,608,858 B1) and Atarius et al. (US Patent 6,373,882 B1) as applied to claim 1 above and further in view of Popovic (US Patent 6,292,519 B1)

Re Claim 2, the combination of Sih et al. and Atarius et al. fails to specifically disclose that said finger compensator comprises a filter and an amplitude normalizer coupled serially for receiving an input symbol signal and for generating an output symbol signal. However, Popovic does (Fig. 2 & col. 4, lines 1-11). Popovic discloses a system in which the filter coefficients are normalized so that the impulse response energy is equal to 1. The same filter is used in the receiver as a matched filter in order to maximize the signal to noise ratio before despreading and demodulation.

Therefore, taking the combined teachings of Sih et al., Atarius et al., and Popovic as a whole, it would have obvious to one of ordinary skill in the art to further incorporate a filter and an amplitude normalizer in the manner as claimed into the modified system of Sih and Atarius for the benefit of maximizing the signal-to-noise ratio before entering the despreaders and demodulator.

Claims 3 & 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al. (US Patent 6,608,858 B1), Atarius et al. (US Patent 6,373,882 B1), and

Popovic (US Patent 6,292,519 B1) as applied to claim 2 above and further in view of Kandala et al. (US Patent 6,289,061 B1)

Re Claim 3, the combination of Sih, Atarius, and Popovic fails to specifically disclose that said finger compensator further comprises a first arithmetical module for multiplying said input symbol signal with a conjugated previous input symbol signal. However, Kandala et al. does (Fig. 3: elements 30, 100, & 104, & see col. 6, lines 49-58). Kandala et al. discloses a frequency detector used in WCDMA to determine the frequency error associated with multi-path transmission. The incoming signal is delayed by a delay circuit and then matched with a delayed version of itself.

Therefore, taking the combined teachings of Sih et al., Atarius et al., Popovic, and Kandala et al. as a whole, it would have been obvious to one of ordinary skill in the art to further incorporate in the finger compensator, a first arithmetical module as claimed in the modified system of Sih, Atarius and Popovic for the benefit of achieving synchronization between the transmitter and receiver as compensation in a multi-path transmission system.

However, the combination of Sih, Atarius, Popovic, and Kandala fails to teach a second arithmetical module for multiplying said output symbol signal with a previous output symbol signal as claimed. However, Official Notice is taken to note that it is notoriously well known in the art that in order to mitigate multi-path interference, it is imperative that an auto correlation be performed on a delayed signal and the signal itself. Therefore, it would have been obvious to one of ordinary skill in the art to have

included this feature into the modified system of Sih, Atarius, Popovic, and Kandala for the benefit of precluding multi-path interference caused by various paths in which the signal passes through prior to its destination in order to mitigate multi-path interference.

Re Claim 4, the combination of Sih et al., Atarius et al., Popovic, and Kandala et al. further teaches a rake receiver characterized in that said at least one finger comprises a pilot channel correlator and a traffic channel correlator (In Sih et al., see Fig. 3, & col. 3, lines 1-14, where each of the fingers is a despreader), with an output of said finger compensator being coupled to first inputs of a third and fourth arithmetical module, of which second inputs are coupled to outputs of said correlators (Atarius et al., it very well known that the output of the finger compensator, element 320, has a compensating circuit that contains most, if not all, of these elements).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sih et al. (US Patent 6,608,858 B1), Atarius et al. (US Patent 6,373,882 B1), and Popovic (US Patent 6,292,519 B1), and Kandala et al. (US Patent 6,289,061 B1) as applied to claim 4 above, and further in view of Huang et al. (US Patent 6,154,443)

Re Claim 5, the combination of Sih et al., Atarius et al., Popovic, and Kandala et al. further teaches at least one finger comprises an averaging unit (In Sih et al., see Fig. 7: 710), but fails to teach an input (of the average unit) is coupled to an output of said third arithmetical module and of which an output is coupled to a first input of a fifth

arithmetical module, of which a second input is coupled to an output of said fourth arithmetical module. However, Huang et al does (see Fig. 2A). Huang et al. teaches a CDMA rake receiver that computes a data detection using FFT matched filters. The rake receiver is comprised of a pilot signal spreading code matched filter, data signal spreading code matched filter, channel frequency response estimation unit, channel matched filter, and a pilot interference cancellation unit. The input of the average unit 104, in Huang et al., is coupled to a delay unit 102 & a multiplier 72. And the output of the average unit 104 is coupled to reserve main paths unit 106, complex conjugate 100, and multiplier 96. There is a second input coupled to unit 96 that comes from another multiplier unit 88. Unit 88 is responsible for despreading the data signal. The examiner is taking into consideration that elements 13, 14 & 16 in the applicant's application correspond to elements 72, 88, & 96 respectively of Huang.

Therefore, taking the combined teachings of Sih et al., Atarius et al., Popovic, Kandala et al. and Huang et al. as a whole, it would have been obvious to one of ordinary skill in the art to incorporate an input (of the average unit) is coupled to an output of said third arithmetical module and of which an output is coupled to a first input of a fifth arithmetical module, of which a second input is coupled to an output of said fourth arithmetical module as claimed into the modified system of Sih, Atarius, Popovic, Kandala for the benefit of obtaining compensation due to multi- path interference as noted in Huang (see Summary of the Invention).

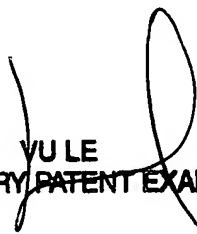
Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on 571-270-1195. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LF
November 6, 2006


VU LE
SUPERVISORY PATENT EXAMINER